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SOUTHEASTERN COOPERATIVE WILDLIFE DISEASE STUDY

COLLEGE OF VETERINARY MEDICINE
THE UNIVERSITY OF GEORGIA
ATHENS, GEORGIA 30602-7393

TELEPHONE
(706) 542-1741
FAX
(706) 542-5865

Make sure David V. has a copy. Done cy 2/24/98 File FW

January 14, 1998

Mr. Tim Wilkins
Hillside National Wildlife Refuge
Route 1, Box 286
Hollandale, Mississippi 38748

Dear Tim:

Enclosed is our report on the deer herd health check that we conducted on Hillside National Wildlife Refuge, Holmes County, Mississippi, on September 3, 1997. The data are summarized in three tables (parasitologic, serologic, and pathologic) and are accompanied by interpretative comments. Our findings are briefly summarized below.

This population appears to be near nutritional carrying capacity based on the moderately high APC value, the levels of other parasites and pathologic conditions, and the general physical parameters of the animals. Currently, the herd does not appear to have any significant density related health problems, and we did not encounter any overtly diseased deer. The herd has moderate immunity to epizootic hemorrhagic disease viruses, but prediction of future activity by the hemorrhagic viruses is not possible. Our data indicate that the herd can be maintained near its present density without undue risk of declines in herd health provided that habitat quality remains stable. Any significant increase in density can be expected to be accompanied by problems with a syndrome of parasitism and malnutrition. The physical parameters for this population are generally lower than those for the Yazoo National Wildlife Refuge animals, and my explanation for this is the higher soil fertility and more extensive availability of agricultural crops at Yazoo National Wildlife Refuge.

I trust this information will be of value in the management of this deer population. If you have any questions about the report, please do not hesitate to contact me.

Best regards,

Sincerely,

Randy

William R. Davidson, Ph.D.
Assistant Professor

WRD
Enclosures
CC: Mr. Bill Alexander
Mr. S. Ray Aycock
Mr. C. Robert Cooke, Jr.
Dr. E. Frank Bowers
Dr. Milton Friend
Mr. Robert Griffin
Mr. Bill Thomason

Table 1. Arthropod, helminth, and protozoan parasites of five white-tailed deer (Odo
Wildlife Refuge, Holmes County, Mississippi, on September 3, 1997.

Animal Number	1	2	3	4	5	Animal N
Age (years)	2.5	2.5	2.5	1.5	2.5	Lice
Sex	F	F	F	M	F	Louse Fl
Weight (pounds)	100	130	112	130	130	Ticks
Physical Condition	Fair	Fair	Fair	Good	Fair	Chiggers
Kidney Fat Index	17.4	14.4	15.0	32.5	13.9	Ear Mite
Packed Cell Volume	44	47	48	54	43	Nasal Bo
Hemoglobin	15.8	16.5	16.5	18.0	17.3	

Location in Host	HELMINTHS	Number of Parasites Per 1	2	3	4
Subcutaneous					
Brain					
Circulatory					
Lungs	Dictyocaulus viviparus	-	8	9	5
	Protostrongylid larvae	+	+	-	+
Abdominal Cavity	Setaria yehi	1	-	-	+
Liver					
Esophagus	Gongylonema pulchrum	-	-	-	-
Rumen					
Abomasum	Mazamastrongylus pursglovei	370	1,252	928	862
APC = (1,328)	Ostertagia dikmansi	277	167	-	215
	Ostertagia mossi	1,293	501	52	323
	Trichostrongylus askivali	-	-	-	-
	PROTOZOANS				
Blood	Theileria cervi	+	-	-	+

Table 2. Results of serologic tests for selected diseases in five white-tailed deer from Hillside National Wildlife Refuge, Holmes County, Mississippi, on September 3, 1997.

Disease	Deer Number 1	2	3	4	5
Leptospirosis					
(serotype bratislava)	Neg	Neg	Neg	Neg	Neg
(serotype pomona)	Neg	Neg	Neg	Neg	Neg
(serotype hardjo)	Neg	Neg	Neg	Neg	Neg
(serotype grippotyphosa)	Neg	Neg	Neg	Neg	Neg
(serotype icterohemorrhagiae)	Neg	Neg	Neg	Neg	Neg
(serotype canicola)	Neg	Neg	Neg	Neg	Neg
Brucellosis	Neg	Neg	Neg	Neg	Neg
Infectious bovine rhinotracheitis (IBR)	Neg	Neg	Neg	Neg	Neg
Bovine virus diarrhea (BVD)	Neg	Neg	Neg	Neg	Neg
Parainfluenza$_3$ (PI_3)	Neg	Neg	Neg	Neg	Neg
Epizootic hemorrhagic disease (EHD)	Neg	Pos	Neg	Neg	Pos
Bluetongue (BT)	Neg	Wk+	Neg	Neg	Wk+

Table 3. Lesions and pathologic conditions in five white-tailed deer collected from Hillside National Wildlife Refuge, Holmes County, Mississippi, on September 3, 1997.

	Deer Number				
Lesion/Condition	1	2	3	4	5
Focal verminous pneumonia	-	1	-	-	1
Bronchitis/peribronchitis	-	2	-	-	-
Fibrinous pleuritis	1	-	1	1	1
Pneumonitis	1	1	-	-	-
Fibrinous peritonitis	1	-	-	1	-
Chronic interstitial nephritis	-	-	-	-	1
Infectious cutaneous fibroma	1	-	-	-	-

*Key: - = lesion or condition not present; 1 = minor tissue damage or mild pathologic change; 2 = moderate tissue damage or moderate pathologic change; 3 = extensive tissue damage or marked pathologic change.

INTERPRETIVE COMMENTS: White-tailed deer collected from Hillside National Wildlife Refuge, Holmes County, Mississippi, on September 3, 1997.

Large lungworms (Dictyocaulus viviparus) present at low numbers in three deer. Protostrongylid larvae, probably from muscleworms (Parelaphostrongylus andersoni), present in four animals. Large lungworms and protostrongylid larvae associated with mild to moderate lung damage (pleuritis, pneumonitis, pneumonia, peribronchitis) in all five deer. Abomasal parasites (Mazamastrongylus pursglovei, Ostertagia dikmansi, O. mossi, Trichostrongylus askivali) at a moderately high level (APC = 1,328) indicating that the herd has a fair to good probability of being near the upper limit of nutritional carrying capacity. Abdominal worms (Setaria yehi) and gullet worms (Gongylonema pulcrum) present at low numbers but not considered important to herd health at the levels encountered. Abdominal worms associated with mild inflammation of the abdominal cavity (peritonitis) in two deer. Blood protozoans (Theileria cervi) present in two of the animals but not considered pathogenic in deer that are otherwise healthy. Arthropod parasites at levels typical of many deer herds in the Southeast.

Physical condition ratings, kidney fat indices, hematologic values, and body weights were not remarkable and were within ranges of animals in reasonable overall health. In addition to lesions attributable to parasitism (noted above), pathologic studies disclosed mild nonspecific inflammation of the kidneys in one deer and a viral skin tumor (fibroma) in one deer; these conditions are not important to overall herd health. Serologic tests disclosed antibodies to epizootic hemorrhagic disease (EHD) virus in two deer and weak reactions (probably cross-reactions) to bluetongue virus in the same animals. These antibodies indicate a fair amount of activity by EHD virus sometime during the past 3 years (the deer were 2.5 yrs old) and confirm a moderate degree of herd immunity to EHD. Serologic tests for antibodies to other selected infectious diseases were uniformly negative indicating minimal activity by these diseases within the population.

An overview is as follows: (1) based on APC data the herd probably is near nutritional carrying capacity; (2) the levels of important pathogenic parasites, especially large lungworms, are not at levels sufficient to be of immediate concern; (3) EHD virus has been active on the area in the relatively recent past and there currently is moderate level of herd immunity to EHD; (4) other selected viral and bacterial diseases have not had high levels of activity on the area; and (5) the overall health status of the herd presently indicates minimal disease-related mortality. Continuation of current herd density should not present undue disease risks; however, any substantial herd growth can be expected to result in declines in herd health and higher rates of disease-induced mortality, especially from density dependent pathogens such as parasites.